

In the Claims:

- 1 16. (New) --An apparatus comprising:  
2 an analog photocell;  
3 a sample and hold amplifier, a first input to the sample and hold amplifier being a  
4 charge from the analog photocell, a second input to the sample and hold  
5 amplifier being a reference voltage; and  
6 an analog to digital converter, the analog to digital converter converting the  
7 output of the sample and hold amplifier to a digital value.--
- 1 17. (New) --The apparatus of claim 16, wherein the sample and hold amplifier  
2 produces a scaled version of the voltage output of the analog photocell.--
- 1 18. (New) --The apparatus of claim 17, wherein the sample and hold amplifier  
2 matches the dynamic ranges of the analog photocell and the analog to digital  
3 converter.--
- 1 19. (New) --The apparatus of claim 17, wherein the sample and hold amplifier  
2 modifies the dynamic range of the analog photocell based, at least in part, on  
3 ambient light conditions.--
- 1 20. (New) --The apparatus of claim 16, wherein the analog to digital converter  
2 comprises:  
3 a voltage controlled oscillator, an input of the voltage controller oscillator being a  
4 output from the sample and hold amplifier; and

5 a counter, the counter being driven by an output of the voltage controlled  
6 oscillator.--

1 21. (New) --The apparatus of claim 20, further comprising a memory, the memory  
2 storing an output of the counter.--

1 22. (New) --The apparatus of claim 21, wherein counter is reset after a certain period  
2 of time.--

1 23. (New) --The apparatus of claim 22, wherein the period of time is an integration  
2 time for the analog photocell.--

1 24. (New) --A method comprising:  
2 inputting a charge of a analog photocell to a sample and hold amplifier;  
3 inputting a reference voltage to the sample and hold amplifier;  
4 converting an output of the sample and hold amplifier to a digital value.--

1 25. (New) --The method of claim 24, further comprising:  
2 modifying the scale of the analog photocell charge using the sample and hold  
3 amplifier.--

1 26. (New) --The method of claim 25, wherein the sample and hold amplifier matches  
2 a dynamic range of the analog photocell to a dynamic range appropriate for  
3 converting the output of the sample and hold amplifier to a digital value.--

1 27. (New) --The method of claim 25, a dynamic range of the analog photocell is  
2 modified based, at least in part, on ambient light conditions.--

1 28. (New) --The method of claim 24, wherein converting the output of the sample  
2 and hold amplifier to a digital value comprises:  
3 applying an output of the sample and hold amplifier to a voltage controlled  
4 oscillator; and  
5 driving a counter using the output of the voltage controlled oscillator.--

1 29. (New) --The method of claim 28, wherein a count from the counter is  
2 proportional to the intensity of light on the analog photocell during a previous  
3 integration time period for the photocell.--

1 30. (New) --The method of claim 29, further comprising storing a count from the  
2 counter in a register.--

1 31. (New) --The method of claim 30, further comprising resetting the counter after  
2 the passage of the integration time period for the photocell.--

1 32. (New) --An digital photocell comprising:  
2 an analog photocell;  
3 a sample and hold amplifier, a first input of the sample and hold amplifier being  
4 an output of the analog photocell and a second input of the sample and  
5 hold amplifier being a reference voltage;  
6 a voltage controlled oscillator, an input to the voltage controlled oscillator being  
7 an output of the sample and hold amplifier;  
8 a counter, a speed at which the counter operates being controlled by an output of  
9 the voltage controlled oscillator; and

10 a register, the register storing an output of the counter.--

1 33. (New) --The digital photocell of claim 32, wherein the counter counts for a  
2 specified time period and wherein the counter is reset at the end of the time  
3 period.--

1 34. (New) --The digital photocell of claim 32, wherein the time period is an  
2 integration time period for the analog photocell.--

1 35. (New) --The digital photocell of claim 34, wherein the output stored in the  
2 register is a digital value that reflects an intensity of light incident on the analog  
3 during the previous integration time period.--

1 36. (New) --The digital photocell of claim 32, wherein the digital photocell is  
2 included in a pixel array.--

1 37. (New) --The digital photocell of claim 32, wherein the sample and hold amplifier  
2 scales the input to the voltage controlled oscillator.--

1 38. (New) --The digital photocell of claim 37, wherein the input to the voltage  
2 controlled oscillator is scaled based at least in part on ambient light levels.--

1 39. (New) --A method comprising:  
2 applying a voltage of a analog photocell as a first input to a sample and hold  
3 amplifier;  
4 applying a reference voltage as a second input to the sample and hold amplifier;

5       applying an output of the sample and hold amplifier to a voltage controlled  
6               oscillator;  
7       driving a counter with the output of the voltage controlled oscillator;  
8       saving a count from the counter; and  
9       resetting the counter at the conclusion of a time period.--

1   40.   (New) --The method of claim 39, wherein the time period is an integration period  
2       of the analog photocell.--

1   41.   (New) --The method of claim 39, wherein the count from the counter is saved in  
2       a register.--

1   42.   (New) --The method of claim 39, wherein the count from the counter is  
2       proportional to intensity of light incident on the analog photocell.--